

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A double-stranded RNA complex comprising:
 - (a) a first portion comprising a first ribonucleic acid sequence ~~capable of hybridizing~~ that hybridizes under physiological conditions to at least a portion of an mRNA molecule; ~~and~~
 - (b) a second portion comprising a second ribonucleic acid sequence, at least a portion of which is capable of hybridizing under physiological conditions to the first portion; and
 - (c) an additional ribonucleic acid sequence that enhances the ability of dsRNA to alter expression of the gene encoding the mRNA molecule.
2. (Previously Presented) The double-stranded RNA complex of claim 1 wherein the first and second portions are separate ribonucleic acid molecules.
3. (Previously Presented) The double-stranded RNA complex of claim 1 wherein the mRNA is transcribed from a gene in a cell.
4. (Currently Amended) A linear RNA molecule capable of forming [a]the double-stranded RNA complex of claim 1 ~~wherein the RNA molecule comprises:~~
 - (a) ~~a first portion that hybridizes to at least a portion of an mRNA molecule; and~~
 - (b) ~~a second portion wherein at least part of the second portion is capable of hybridizing to the first portion to form a hairpin double-stranded RNA complex.~~
5. (Previously Presented) The linear RNA molecule of claim 4 wherein the mRNA is transcribed from a gene in a cell.

6. (Currently Amended) The linear RNA molecule of claim 4 further comprising a third portion of ribonucleic acid located between the first and second portions; wherein said third portion promotes hybridization between the first and second portions.

7-20. (Canceled)

21. (Currently Amended) At least one A DNA molecule ~~encoding from which the~~ RNA ~~sequences~~ molecule of claim ~~12~~ can be transcribed a), b), and c) of claim 1.

22. (Currently Amended) ~~A~~ At least one DNA molecule ~~from which~~ encoding the RNA molecule of claim 1 or 4 ~~15~~ can be transcribed.

23. (Canceled)

24. (Currently Amended) A eukaryotic cell comprising the RNA molecule of claim ~~12~~ 1 or 4.

25. (Currently Amended) A eukaryotic cell comprising the DNA molecule of claim 21 or 22.

26. (Previously Presented) The eukaryotic cell of claim 24 or 25 wherein the cell is a mammalian cell.

27. (Previously Presented) The mammalian cell of claim 26 wherein the cell is a human cell.

28. (Previously Presented) The cell of claim 27 wherein the cell further comprises nucleic acid from HIV.

29. (Currently Amended) The cell of claim 24 or 25 wherein the cell is neoplastic.

30. (Currently Amended) At least one vector comprising the DNA ~~molecule~~ of claim 21 or 22, or a ~~DNA from which encoding the RNA molecule of claim 12-1 or 4 can be~~ transcribed.

31. (Canceled)

32. (Previously Presented) The vector of claim 30 wherein the vector is a plasmid, an adenoviral vector, an adenoassociated viral vector, or a retroviral vector.

33. (Previously Presented) The vector of claim 32 wherein the plasmid is an episomal plasmid.

34. (Currently Amended) A method for inhibiting expression of a protein in a eukaryotic cell comprising the step of introducing the RNA of claim [12]1 or 4, the DNA ~~molecule~~ of claim 21 or 22, or the vector of claim 30 into the cell.

35. (Previously Presented) The method of claim 34 wherein the eukaryotic cell is a mammalian cell.

36. (Currently Amended) The method of claim 35 wherein the cell is ~~a human cell~~, a somatic cell, an undifferentiated cell, a dedifferentiated cell, a neoplastic cell, or a chimeric cell.

37. (Currently Amended) The method of claim 34 wherein the RNA, DNA, or vector is introduced into the cell using a vesicle or ~~delivery~~ by microinjection.

38. (Currently Amended) The method of claim 34 wherein the mRNA ~~encodes a protein selected from the group consisting of a~~ is cancer-related ~~gene product~~, a rheumatoid arthritis-related ~~gene product~~, and a or viral ~~gene product~~.

39. (Currently Amended) The method of claim 38 wherein the mRNA is ~~transcribed from an HIV-related gene.~~

40. (Currently Amended) ~~A~~The method of claim 39 wherein the mRNA is encoded by a gene is selected from the group consisting of *tat*, *nef*, *rev*, *ma*, *ca*, *nc*, ~~pg~~ po, *vpu*, *pr*, *vif*, *su*, *tm*, *vpr*, *rt* and *in*.

41-57. (Canceled)

58. (Currently Amended) A method for modulating expression of a specific nucleic acid sequence in a first cell comprising exposing the first cell to culture medium which has been used to maintain ~~cells~~ a second cell in culture; ~~wherein the cells so maintained contain a double-stranded RNA complex comprising a first portion that hybridizes to at least part of a mRNA molecule transcribed from a gene; and a second portion wherein at least part of the second portion is capable of hybridizing to the first portion~~ said second cell containing nucleic acid sequence encoding a sense strand for the specific nucleic acid and an antisense strand thereto; wherein said first cell is mammalian.

59. (Canceled)

60. (Currently Amended) A method of forming a double-stranded RNA in a cell comprising the step of introducing the RNA ~~molecule~~ of claim ~~[42]~~1 or 4 or the DNA ~~molecule~~ of claim ~~21~~ or 22 into a cell.

61-62. (Canceled)

63. (Currently Amended) A method of inhibiting expression of a gene in a cell comprising the step of introducing into the cell the RNA of claim ~~[42]~~1 or 4, the DNA of claim ~~21~~ or 22, or the vector of claim 30.

64. (Currently Amended) A pharmaceutical composition comprising the RNA of claim ~~[42]~~1 or 4, the DNA of claim 21 or 22, or the vector of claim 30.

65. (Currently Amended) A microinjection apparatus comprising a pharmaceutical composition comprising the RNA of claim ~~[42]~~1 or 4, the DNA of claim 21 or 22, or the vector of claim 30.

66. (Currently Amended) A lipid vesicle comprising the RNA of claim ~~[42]~~1 or 4, the DNA of claim 21 or 22, or the vector of claim 30.

67. (Canceled).

68. (Previously Presented) A DNA molecule from which the RNA-molecule of claim 4 can be transcribed.

69. (Currently Amended) A DNA molecule from which the RNA molecule of claim ~~49~~1 can be transcribed.

70. (New) The RNA of claim 1 or 4 that encodes an RNA that enhances the ability of dsRNA to alter expression of the gene encoding the mRNA molecule.

71. (New) The RNA of claim 70 that encodes a short viral or cellular dsRNA.

72. (New) The RNA of claim 71 that encodes adenovirus VAI, HIV-1 TAR, EBER-1, or Alu RNA.

73. (New) The RNA of claim 1 or 4 that encodes a protein that enhances the ability of dsRNA to alter expression of the gene encoding the mRNA molecule.

74. (New) The RNA of claim 73 wherein the protein is an HIV Tat protein.

75. (New) The RNA of claim 1 or 4 which encodes a protein that modulates the global mammalian cell response to dsRNA.

76. (New) The RNA of claim 75 wherein the protein is a mammalian viral protein or a cellular protein.

77. (New) The RNA of claim 75 wherein the protein is vaccinia virus early protein E3L, reovirus p3 protein, vaccinia virus pK3, HIV-1 Tat, PKR dominant negative proteins, p58, v-erbB, sos, or activated ras.

78. (New) The RNA of claim 1 or 4 that encodes an enzyme component of the host protein complex that acts specifically on dsRNA to enhance the efficacy of dsRNA in controlling specific gene expression.

79. (New) The method of claim 58 wherein a specific silencing signal is secreted into the culture medium by the second cell.

80. (New) The method of claim 79 wherein the specific silencing signal is derived from a mammalian cell, a *Drosophila* cell, or a plant cell.

81. (New) The method of claim 58 wherein the first cell is a human cell.

82. (New) The method of claim 58 wherein the second cell is a human cell.

83. (New) The method of claim 82 wherein the expression of the nucleic acid sequence in the first cell is decreased 50%.

84. (New) The method of claim 58 wherein the modulated nucleic acid is an mRNA.

85. (New) A DNA encoding the linear RNA molecule of claim 4, said DNA comprising transcription termination and polyadenylation signals.

86. (New) The method of claim 35 wherein the eukaryotic cell is a human cell.

87. (New) A method for suppressing expression of a specified nucleic acid sequence in a eukaryotic cell comprising introducing into the cell (a) a double-stranded RNA complex, at least one of whose strands hybridizes, under hybridizing conditions, to at least a portion of an mRNA molecule encoded by the nucleic acid sequence; and (b) HIV Tat protein.

88. (New) A pharmaceutical composition for inhibiting expression of a gene in a cell, the composition comprising a double-stranded RNA complex, at least one strand of which hybridizes under hybridizing conditions to at least a portion of an mRNA molecule encoded by the gene; and an HIV Tat protein, in a pharmaceutically-acceptable carrier.